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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/598,662	11/09/2006	Ki-Baek Han	5952-064	8632
24112 7590 08/21/2009 COATS & BENNETT, PLLC 1400 Crescent Green, Suite 300 Cary, NC 27518				
EXAMINER				
ANDERSON, DENISE R				
ART UNIT		PAPER NUMBER		
1797				
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08/21/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/598,662

Applicant(s)

HAN ET AL.

Examiner

Denise R. Anderson

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Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 June 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 25-53 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 25-53 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
- Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. In view of the appeal brief filed on June 19, 2009, PROSECUTION IS HEREBY

REOPENED. New grounds of rejection are set forth below.

2. To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

3. A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

/Walter D. Griffin/
Supervisory Patent Examiner, Art Unit 1797

Specification

4. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

- a. Member with air supply holes – Claims 29 and 37. In the patentability analysis, the examiner will interpret this as the media fixing plate 12 with air supply holes 14 recited in the specification and shown in Figs. 6 and 7.

- b. Annular device – Claim 43. In the patentability analysis, the examiner will interpret this as the density control plate 9 recited in the specification and shown in Figs. 2 and 10.
 - c. Array of openings in a circumferential band – Claims 31 and 46. In the patentability analysis, the examiner will interpret this as the supplied water passing holes 8 in the elongated housing forming main body 1 recited in the specification and shown in Figs. 2 and 9.
 - d. Annular plate – Claim 52. In the patentability analysis, the examiner will interpret this as the density control plate 9 recited in the specification and shown in Figures 2 and 10.
5. One suggestion is for applicant to petition future objections rather than appeal them to the Board. As is stated in MPEP 706.01, “The practical difference between a rejection and an objection is that a rejection, involving the merits of the claim, is subject to review by the Board of Patent Appeals and Interferences, while an objection, if persisted, may be reviewed only by way of petition to the Director of the USPTO. Similarly, the Board will not hear or decide issues pertaining to objections and formal matters which are not properly before the Board. These formal matters should not be combined in appeals to the Board.”

Claim Rejections - 35 USC § 103
Fine Filtering Apparatus Recited In Claims 25-33, 34-40 and 53

6. Independent claims 25 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boye (WO 02/24306 A1, Mar. 28, 2002), in view of Raff et al. (U.S. Patent No. 5,053,130,

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Oct. 1, 1991) for the density control plate's location explicitly shown below the water jacket guide when the filtering apparatus is set on end.

7. Below is a key which matches the recited structure to that of the prior art. After that, the claims will appear in *italics* with the keyed structure underlined. The examiner's comments will appear in normal font.

Table 1: Key to match claimed structure to that of prior art.		
Claimed Structure	Specification Support	Prior Art Structure in Boye
<u>Filtering apparatus</u>	Fig. 2, filtering apparatus 100.	Figs. 1-4, filtering device.
<u>Housing with cavity.</u>	Fig. 2, housing forming a main body 1 (§ 44, line 3) and a main body forming a treatment cavity (§ 31, line 2). Water inlet is Fig. 2, water inlet 2. Clarified water outlet is Fig. 2, discharge pipeline 3.	Fig. 1, holding member 9 that includes housing member 1. Water inlet is Fig. 2, fluid inlet pipe 48. Clarified water outlet structure shown in Fig. 2, before valve 65 connected to pipe 64 leading to filtered fluid container 70. Waste outlet structure shown in Fig. 2, before valve 62 connected to pipe 61 leading to deposit container 60. Air inlet is Fig. 2, inlet 66.
<u>Water inlet.</u>		
<u>Clarified water outlet.</u>		
<u>Waste outlet.</u>	Waste outlet is Fig. 2, waste outlet 5.	
<u>Air inlet.</u>	Air outlet is Fig. 2, air supply pipeline 4.	
<u>Fibers.</u>	Fig. 2, fiber filter media 6.	Fig. 1, fibers 2 that "may be solid or hollow." Boye, p. 7, line 7.
<u>Water guide jacket</u>	Fig. 2, water guide jacket 7.	Fig. 1, structure that surrounds inlets 6.
<u>Header jacket</u>	Fig. 2, filtrate discharge jacket 16.	Fig. 1, includes structure shown at arrow exiting the filter device. Waste outlet structure shown in Fig. 2, before valve 62 connected to pipe 61 leading to deposit container 60. Clarified water outlet structure shown in Fig. 2, before valve 65 connected to pipe 64 leading to filtered fluid container 70.
<u>Density control plate</u>	Fig. 2, density control plate 9.	Fig. 1, compressing means 7a and 7b, first inner collar 11 and second inner collar 12; Fig. 3, compressing means 303, ring 314. Raff et al., Fig. 7, ring 6b.
<u>Media fixing plate</u> <u>Air supply holes</u>	Fig. 2, media fixing plate 12. Figs. 6-8, media fixing plates 12a, 12b, and 12c with air supply holes 14.	Fig. 1, black rectangle at inlet end 5. Air supply holes - Zha et al., Fig. 9, and col. 8, lines 20-27, aeration holes 52 where "the lower potting head 48" has "fiber membranes 53 [that] are potted in bundles 46 to form a partitioned arrangement having spaces 54" and "there is generally a

		number of aeration holes associated with each space."
<u>Porous chamber</u>	Fig. 2, porous chamber 10.	Barzuza et al. teaches that it is known in the water filtration art to place a skirt of solid flexible fibers (fibers 6) around a porous chamber (filter tube 2 having perforations 4). Barzuza et al., col. 1, lines 9-10; Figs. 1 and 20-23; col. 3, lines 1-4.

Claim 25. (Currently Amended) A fine filtering apparatus for removing fine particles from water, the device comprising:

- a. an elongated housing forming a main body and having an impervious wall enclosing an interior cavity that extends through the housing;*
- b. a plurality of flexible fibers extending within the cavity for contacting flowing water and removing fine particles from the water without separating a permeate from the water;*
- c. the housing including a pair of opposed end portions wherein disposed adjacent a first end portion is a water inlet for receiving a stream of water, the inlet including an annular water guide jacket extending around the first end portion of the housing and being in fluid communication with the cavity for distributing the water within the cavity;*
- d. a header jacket disposed adjacent an opposite second end portion of the housing;*
- e. the header jacket including a clarified water outlet for discharging a clarified water from the cavity;*
- f. the header jacket also including a waste outlet for discharging a concentrated waste from the cavity;*

- g. an air inlet for directing air into the cavity such that the air may contact the fibers and clean some of the fine particles from the fibers;*
- h. a density control plate having an annular shape and disposed within the housing below the water guide jacket for increasing a density of the fibers below the water guide jacket and for generally inhibiting the water from flowing downwardly in a direction toward the air inlet;*
- i. in one mode of operation of the fine filtering apparatus, the water is directed through the cavity and some of the fine particles are removed from the water producing the clarified water that is discharged from the cavity via the clarified water outlet; and*
- j. in another mode of operation of the fine filtering apparatus, both the air and the water are directed through the cavity and some of the fine particles are cleaned from the fibers producing the concentrated waste that is discharged from the cavity through the waste outlet.*
8. In Figs. 1-4, Boye discloses "a device and a method for filtering a fluid." Boye, p. 1, line 5. As shown in Fig. 1, Boye teaches an elongated housing (holding member 9) with flexible fibers (fibers 2) that "may be solid or hollow." Boye, p. 7, line 7. The Boye housing in Fig. 1 has a first end portion (inlet end 5) and a second end portion (outlet end 3). Boye further discloses that the first end portion has a water inlet (Fig. 2, fluid inlet pipe 48) and an annular water guide jacket that surrounds the inlets 6 shown in Fig. 1. About the inlets 6, Boye also teaches, "A number of inlets 6 are arranged in the side-wall of the fibre housing 1 near the inlet end 5." Boye, p. 10, lines 32-33. Boye also discloses a header jacket (Fig. 1, includes structure shown at arrow exiting the filter device) that has a clarified water outlet (Fig. 2, before valve 65

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connected to pipe 64 leading to filtered fluid container 70) and a waste outlet (Fig. 2, before valve 62 connected to pipe 61 leading to deposit container 60). The Boye apparatus also has an air inlet (Fig. 2, inlet 66) that "may be used for injecting or conducting a liquid, air or a gas into the system to be used for a flushing process." Boye, p. 14, lines 20-21.

9. One further point can be made regarding the recited header jacket. Regarding claims 25 and 41, applicant argues, "[T]he alleged header jacket in Boye [that] includes both a clarified water outlet and waste outlet is unsupported," and, "Boye does not disclose a device that includes both a clarified water outlet and a concentrated waste outlet." Appeal Brief, p. 12, lines 1-2; p. 17, lines 6-7. Header jackets are known in the art that look more like applicant's Fig. 2, filtrate discharge jacket 16. For example, Raff et al. discloses header jackets (Figs. 3, 6, and 9) with clarified water outlets (outlets 15 and 15b) and waste outlets (outlets 4 and 4b). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have substituted the Boye header jacket for that disclosed in Raff et al., since it was known in the art to provide a clarified water outlet and a waste outlet in a filtering apparatus.

10. Regarding the recited filtering (limitation i) and cleaning modes (limitation j), Boye discloses the two modes in Fig. 2 and in the statement, "[A] major advantage of a filtering device according to the present invention is the possibility of flushing the fibres when the pressure on the fibres is released. The flushing process may be either a forward or a backward flushing process. This is illustrated in Fig. 2." Boye, p. 14, line 24 and p. 13, lines 25-28.

11. Regarding the density control plate, Boye discloses five density control plates (Fig. 1, compressing means 7a and 7B, first inner collar 11 and second inner collar 12; Fig. 3, compressing means 303, ring 314) that are within housing (Fig. 1, holding member 9; Fig. 3, housing 301), some of which are near the water jacket guide (Fig. 1, water jacket guide

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surrounds inlets 6). Boye further teaches the functional density control limitation when Boye discloses, "[T]he principles of having a fluid filtration wherein a plurality of fibres extend longitudinally in the direction of the fluid flow, and wherein the quality of the filtration is controlled by adjusting the compression and thereby the density of the fibres is known." Boye, p. 2, lines 10-13.

12. In Figs. 1 and 3, Boye discloses the functional limitation of the density control plate inhibiting water from flowing in the direction toward the air inlet and further teaches, "means for passing a liquid and/or a gas through the uncompressed fibres in a direction from the inlet towards the outlet or in an opposite direction, so as to forward flush or backward flush the device." Boye, p. 8, lines 27-29.

13. Boye discloses the claimed invention except for explicitly showing the density control plate's location below the water jacket guide when the filtering apparatus is set on end. In Fig. 7, Raff et al. discloses this in the context of a "filtration apparatus" with "hollow fibers." Raff et al., col. 1, lines 6-14. Specifically, Raff et al. discloses a density control plate (ring 6b) next to the water jacket guide (expanded part 7b). In Figs. 4 and 7, Raff et al. further teaches an annular water jacket guide analogous to applicant's when Raff et al. shows inlet 4b leading into slots between "fingers or tongues 18a arranged in the expanded part 7a of the housing 2a" where "[t]hese fingers or tongues 18a are integral extensions of the inner wall of the housing 2a." Raff et al., col. 5, lines 8-11.

14. Raff et al. further describes the density control plate (ring 6b) as follows. "Interposed between the end wall (applicant's media fixing plate) and the housing (that includes applicant's water jacket guide) is a ring member (applicant's density control plate). This ring member has a shape that corresponds to the housing and defines a cavity between itself and the hollow fibers.

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This ring member has a coefficient of adhesion in relation to the end wall which is lower than the coefficient of adhesion in relation to the housing. As a result, the structural integrity of the housing and the seal created by the end wall is enhanced and the risk of cracks therein is substantially eliminated." In other words, the structural integrity of the fibers' seals is enhanced and the risk of cracks is substantially eliminated.

15. To recap, Boye discloses the claimed invention except for explicitly showing the density control plate's location below the water jacket guide when the filtering apparatus is set on end. Raff et al. teaches this. It would have been obvious to one having ordinary skill in the art at the time the invention was made, in the Boye filtering apparatus, to have located the density control plate "below" the water jacket guide as taught by Raff et al., since Raff et al. states at col. 2, lines 17-24, that such a modification would enhance the structural integrity of the fiber's seal and substantially eliminate the risk of cracks.

16. In summary, Boye, in view of Raff et al., discloses or suggests all claim 25 limitations.

17. Independent claim 34 is shown below with the keyed structure underlined. With the exception of one limitation, claim 34 recites limitations that were already discussed in claim 25 patentability analysis. Claim 34 is missing the limitation that the fibers are solid, as recited in claim 25. As was discussed in the above claim 25 patentability analysis, Boye discloses flexible fibers (Figs. 1 and 3, fibres 2) that "may be solid or hollow." Boye, p. 7, line 7. As such, Boye, in view of Raff et al., for the density control plate's location explicitly shown below the water jacket guide when the filtering apparatus is set on end, discloses or suggests all claim 34 limitations.

Claim 34. (Currently Amended) A fine filtering apparatus for removing fine particles from water directed from a water source, the device comprising:

- a. an elongated housing forming a main body and having an impervious outer wall comprising a substantial portion of the main body;*
- b. an interior cavity extending through the housing and being substantially enclosed within the outer wall;*
- c. a plurality of flexible fibers extending within the cavity for contacting flowing water and removing fine particles from the water;*
- d. first and second end portions of the housing each disposed adjacent opposite first and second ends of the housing;*
- e. a water inlet disposed on the first end portion for directing the water into the cavity;*
- f. the second end portion of the housing, including a clarified water outlet for discharging clarified water from the cavity and a waste outlet for discharging a concentrated waste from the cavity;*
- g. an air inlet disposed adjacent the first end portion for directing air into the cavity for contacting the fibers and for cleaning some of the fine particles from the fibers;*
- h. a density control plate for increasing the density of the fibers in an area of the cavity between the water inlet and the air inlet and wherein the increased density of the fibers generally inhibits the water from flowing in a direction from the water inlet towards the air inlet, the density control plate comprising an annular plate disposed within the housing between the water inlet and the air inlet and*

having an opening through which the fibers extend, wherein the annular plate constrains the fibers to the opening thereof, thereby increasing the density of the fibers in the opening of the annular plate and generally inhibiting the flow of water from the water inlet, through the opening of the annular plate, to the air inlet;

- i. in one mode of operation of the fine filtering apparatus, the water is directed through the cavity and some of the fine particles are removed from the water, producing the clarified water that is discharged via the clarified water outlet; and*
- j. in another mode of operation of the fine filtering apparatus, both the air and the water are directed through the cavity and some of the fine particles are cleaned from the fibers producing the concentrated waste that is discharged via the waste outlet.*

18. Dependent claims 26, 28, 31, 35, 36, 39, and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boye (WO 02/24306 A1, Mar. 28, 2002), in view of Raff et al. (U.S. Patent No. 5,053,130, Oct. 1, 1991) for the density control plate's location explicitly shown below the water jacket guide when the filtering apparatus is set on end – as applied to claims 25 and 34 above.

19. Claims 26 and 28 are analogous to claims 35 and 36. Claim 53 depends on claim 35 and recites that the fibers are solid – a limitation already discussed in the claim 25 patentability analysis. The five claims are shown below with the keyed structure underlined.

Claim 26. (Previously Presented) The fine filtering apparatus of claim 25 wherein first ends of the fibers are secured to a media fixing plate disposed near a first end of the

housing and wherein second ends of the fibers are disposed near a second end of the housing, the second ends of the fibers being unattached and free to move about in the cavity as water passes through the cavity; and wherein the fibers are non-tubular and non-membranous.

Claim 35. (Previously Presented) The fine filtering apparatus of claim 34 wherein first ends of the fibers are secured to a media fixing plate disposed near the first end of the housing and wherein second ends of the fibers are disposed near the second end of the housing, and are unattached and free to move about; and wherein the fibers are non-tubular and non-membranous.

Claim 53. (New) The fine filtering apparatus of claim 35 wherein the flexible fibers remove fine particles from the water without separating a permeate from the water.

Claim 28. (Currently Amended) The fine filtering apparatus of claim 26 wherein the including a density control plate increases the density of fibers in an area of the cavity between the water guide jacket and the media fixing plate and wherein the increased density of the fibers generally inhibits the water from flowing in a direction from the water guide jacket towards the media fixing plate, the density control plate comprising having an annular shaped plate disposed within the housing between the media fixing plate and the annular water guide jacket and having an opening through which the fibers extend, wherein the annular (density control) plate constrains the fibers to the opening thereof, thereby increasing the density of the fibers in the opening of the annular (density

control) plate and generally inhibiting the water from flowing from the water guide jacket to the media fixing plate.

Claim 36. (Currently Amended) The fine filtering apparatus of claim 34 wherein the including a density control plate having an annular shape and is disposed within the housing between a media fixing plate and the water inlet, the density control plate increasing a density of fibers between the media fixing plate and the water inlet.

20. Regarding dependent claims 26 (also claim 35) and claim 28 (also claim 36), Boye, in view of Raff et al., discloses the claimed invention. Boye further teaches that the fibers are attached to a media fixing plate near the inlet and the fibers are free to move near the outlet [claims 26 and 35] with the statement, “When arranging the fibres in the fibre housing it is preferred that the fibres at the inlet end of the fibre housing are attached to an end part of the fibre housing. . . In a preferred embodiment, the fibres have free fibre ends at the opposite end of the inlet end of the fibre housing.” Boye, p. 7, lines 19-20 and 23-24. Boye also teaches that the fibers extend through an opening in each of the disclosed density control plates [claims 28 and 36]. Boye, Fig. 1, fibres 2 extend through an opening in first inner collar 11, compressing means 7a and 7b, and second inner collar 12; Fig. 3, fibres 2 extend through an opening in ring 314 and compression means 304.

21. Claims 28 and 36 also recite locating the density control plate below the water jacket guide, as was discussed in the claim 25 and claim 34 patentability analyses, and above the media fixing plate. Boye, in view of Raff et al., discloses the claimed invention. In Fig. 7, Raff et al. further teaches that the density control plate (ring 6b) is below the water jacket guide (expanded

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part 7b) and above the media fixing plate (hollow fibers 1b arranged in housing 2b where the media fixing plate is shown within restricted part 5b) when the filtering apparatus is set on end. Raff et al. describes the density control plate (ring 6b) as follows. “Interposed between the end wall (applicant’s media fixing plate) and the housing (that includes applicant’s water jacket guide) is a ring member (applicant’s density control plate). This ring member has a shape that corresponds to the housing and defines a cavity between itself and the hollow fibers. This ring member has a coefficient of adhesion in relation to the end wall which is lower than the coefficient of adhesion in relation to the housing. As a result, the structural integrity of the housing and the seal created by the end wall is enhanced and the risk of cracks therein is substantially eliminated.” In other words, the structural integrity of the fibers’ seals is enhanced and the risk of cracks is substantially eliminated.

22. To recap, Boye, in view of Raff et al., discloses the claimed invention. Raff et al. further teaches that the density control plate (ring 6b) is below the water jacket guide (expanded part 7b) and above the media fixing plate (hollow fibers 1b arranged in housing 2b where the media fixing plate is shown within restricted part 5b) when the filtering apparatus is set on end. It would have been obvious to one having ordinary skill in the art at the time the invention was made, in the Boye filtering apparatus, to have located the density control plate “below” the water jacket guide and “above” the media fixing plate as taught by Raff et al., since Raff et al. states at col. 2, lines 17-24, that such a modification would enhance the structural integrity of the fiber’s seal and substantially eliminate the risk of cracks.

23. In summary, Boye, in view of Raff et al., discloses or suggests all limitations recited in claims 26, 28, 35, 36, and 53.

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24. Claim 31 is analogous to claims 39. The two claims are shown below with the keyed structure underlined.

Claim 31. (Previously Presented) The fine filtering apparatus of claim 25 wherein an array of openings is disposed in a circumferential band around the outer wall of the housing, the array of openings in the outer wall being aligned with the annular water guide jacket to conduct the water into the cavity and to distribute the water within the cavity.

Claim 39. (Previously Presented) The fine filtering apparatus of claim 34 wherein an array of openings is disposed in a circumferential band around the outer wall of the housing, the array of openings being aligned with the water inlet which includes an annular water guide jacket to conduct the water into the cavity and to distribute the water within the cavity.

25. Regarding claims 31 and 39, Boye, in view of Raff et al., discloses the claimed invention. In Fig. 1, Boye further teaches the recited openings in the water guide jacket [claims 31 and 39] in the form of inlets 6.

26. In summary, Boye, in view of Raff et al., discloses or suggests all limitations recited in claims 31 and 39.

27. Dependent claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boye (WO 02/24306 A1, Mar. 28, 2002), in view of Raff et al. (U.S. Patent No. 5,053,130, Oct. 1, 1991) for the density control plate's location explicitly shown below the water jacket guide when the filtering apparatus is set on end, as applied to claim 25 above – in further view of Ford et al. (US Patent No. 4,793,932, Dec. 27, 1988) for polypropylene fiber material.

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28. Claim 27 is shown below with the keyed terms underlined.

Claim 27. (Previously Presented) The fine filtering apparatus of claim 25 wherein one or more of the fibers is formed from a material selected from a group including polyamide, polyester, and polypropylene.

Boye, in view of Raff et al., discloses the claimed invention. Boye further teaches, "[T]he fibers may be solid or hollow" and "[i]n a preferred embodiment the fibres comprise polyester or nylon fibres." Boye, p. 7, lines 7-9.

29. Boye discloses the claimed invention except for explicitly stating that the fibers are polypropylene. Ford et al. teaches polypropylene fibers as the preferred embodiment in the context of a "Variable Volume Filter or Concentrator" used "for concentrating the fine solids of a liquid feed suspension" shown in Fig. 1. Ford et al., Title; Abstract, lines 1-3; Fig. 1; col. 4, lines 35-45. It would have been obvious to one having ordinary skill in the art at the time the invention was made, in the Boye filtering apparatus, to have made the flexible fibers of polypropylene, as taught by Ford et al. since Ford et al. states, in the Title and in the Abstract, lines 1-3, that such modification was a preferred polymeric fiber in a "Variable Volume Filter or Concentrator" used "for concentrating the fine solids of a liquid feed."

30. In summary, Boye, in view of Raff et al., in further view Ford et al., discloses or suggests all claim 27 limitations.

31. Dependent claims 29, 30, 37, and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boye (WO 02/24306 A1, Mar. 28, 2002), in view of Raff et al. (U.S. Patent No. 5,053,130, Oct. 1, 1991) for the density control plate's location explicitly shown below the water jacket guide when the filtering apparatus is set on end, as applied to claims 25 and 34

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above – in further view of Zha et al. (U.S. Patent No. 6,524,481 B2, Feb. 25, 2003) for the location of the air supply holes in the media fixing plate.

32. Claims 29 and 30 are analogous to claims 37 and 38. The four claims are shown below with the keyed structure underlined.

Claim 29. (Currently Amended) The fine filtering apparatus of claim 25 including one or more air supply holes disposed in a member within the housing for conducting air into the cavity and dispersing air within the cavity and about the fibers.

Claim 37. (Currently Amended) The fine filtering apparatus of claim 34 including on or more air supply holes in a member disposed within the housing for conducting the air into the cavity and dispersing the air about the fibers.

Claim 30. (Currently Amended) The fine filtering apparatus of claim 29 wherein the one or more air supply holes form an array of air supply holes disposed in a media fixing plate, the array of air supply holes being disposed adjacent ends of the fibers that are secured in the (media fixing) plate and which act to disperse the air about the fibers.

Claim 38. (Currently Amended) The fine filtering apparatus of claim 34 including an array of air supply holes in a media fixing plate disposed within the housing, the (media fixing) plate having ends of the fibers secured thereto, the array of openings (air supply holes) disposed adjacent the ends of the fibers for conducting the air into the cavity and dispersing the air about the fibers.

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33. Regarding dependent claims 29, 30, 37, and 38, Boye discloses an array air supply holes within a plate in Fig. 3, where, "[T]he liquid or fluid may pass from the inlet(s) through the mounting 310 (applicant's air supply holes within a plate), along the fibre-head 309 (applicant's media fixing plate), and then enter into the bundle of fibres along the outer side of the bundle 302." Boye, p. 17, lines 30-32. Boye teaches air through the plate when Boye discloses, "In Fig. 2 is also shown an inlet 66 . . . The inlet 66 may be used for injecting or conducting a liquid, air or a gas into the system to be used for a flushing process." Boye, p. 14, lines 18 and 20-21.

34. Boye, in view of Raff et al., discloses the claimed invention including holes in a plate through which air is supplied – but do not disclose the air supply holes in the media fixing plate, as recited. Zha et al. discloses these in Figs. 1 and 9 in the form of an "apparatus for cleaning a membrane module" where liquid and gas "bubbles entrained therein move past the surfaces of the membranes to dislodge fouling materials therefrom." Zha et al., Abstract, lines 1 and 8-10. Zha et al. further teaches, "As shown in FIG. 9, the lower potting head 48 (applicant's media fixing plate) is provided with a number of parallel arranged slot type aeration holes 52. The fibre membranes 53 are potted in bundles 46 to form a partitioned arrangement having spaces 54 extending transverse of the fibre bundles. The aeration holes 52 (applicant's air supply holes within the media fixing plate) are positioned to generally coincide with the partition spaces, though there is generally a number of aeration holes associated with each space." It would have been obvious to one having ordinary skill in the art at the time the invention was made to have located air supply holes in the Boye media fixing plate, as taught by Zha et al., since Zha et al. states in the Abstract, lines 1 and 9-10, that such a modification would provide an "apparatus for cleaning a membrane module" where liquid and gas "bubbles entrained therein move past the surfaces of the membranes to dislodge fouling materials therefrom."

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35. In summary, Boye, in view of Raff et al. for the density control plate's location explicitly shown below the water jacket guide when the filtering apparatus is set on end, as applied to claims 25 and 34 above – in further view of Zha et al. for the location of the air supply holes in the media fixing plate – discloses or suggests all limitations recited in claims 29, 30, 37, and 38.

36. Claims 32, 33, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boye (WO 02/24306 A1, Mar. 28, 2002), in view of Raff et al. (U.S. Patent No. 5,053,130, Oct. 1, 1991) for the density control plate's location explicitly shown below the water jacket guide when the filtering apparatus is set on end, as applied to claims 25 and 34 above – in further view of Barzuza et al. (US Patent No. 4,617,120, Oct. 14, 1986) for the porous chamber.

37. The three claims are shown below in italics with the keyed structure underlined.

Claim 32. (Previously Presented) The fine filtering apparatus of claim 25 including a porous chamber in fluid communication with the clarified water outlet, the (porous) chamber disposed in the second end portion of the housing and projecting in among the fibers to receive the clarified water from the cavity.

Claim 33. (Previously Presented) The fine filtering apparatus of claim 32 wherein a volume of the porous chamber is about 10% to about 50% of a volume of the cavity.

40. (Previously Presented) The fine filtering apparatus of claim 34 including a (porous) chamber having an array of openings in an outer wall thereof, the (porous) chamber in fluid communication with the clarified water outlet, and the (porous) chamber disposed

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in the second end portion of the housing and projecting in among the fibers for receiving the clarified water.

38. Boye, in view of Raff et al., discloses the claimed invention except that the chamber leading to the clarified water outlet is above the fibers instead of the chamber leading to the clarified water outlet being a porous chamber projecting into the cavity, as recited. Barzuza et al. teaches that it is known in the water filtration art to place a skirt of solid flexible fibers (fibers 6) around a porous chamber (filter tube 2 having perforations 4). Barzuza et al., col. 1, lines 9-14; Figs. 1 and 20-23; col. 3, lines 1-4. It would have been obvious to one having ordinary skill in the art at the time the invention was made, in the Boye filtering apparatus, to have projected the porous chamber into the cavity as taught by Barzuza et al., since Barzuza et al. states at col. 1, lines 43-46 that such a modification would “provide a fluid filtering device that is self-cleaning by a flushing process and is both reliable and inexpensive.”

39. Claim 33 recites a porous chamber that fills 10% to 50% of the cavity volume. It would have been obvious to one having ordinary skill in the art at the time the invention was made, in the Boye filtration apparatus, to have made the porous chamber 10% to 50% of the cavity volume, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

40. In summary, Boye, in view of Raff et al., in further view of Barzuza et al., discloses or suggests all limitations recited in claims 32, 33, and 40.

Claim Rejections - 35 USC § 103
Method to Use Fine Filtering Apparatus Recited In Claims 41-52

41. Claims 41, 42, 46, and 48-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boye (WO 02/24306 A1, Mar. 28, 2002), in view of Raff et al. (U.S. Patent No. 5,053,130, Oct. 1, 1991) for the density control plate's location explicitly shown below the water jacket guide when the filtering apparatus is set on end.

42. Independent claim 41 is shown below with the keyed structure underlined.

Claim 41. (Currently Amended) A method of treating water having fine particles therein with a (filtering apparatus) device having a treatment cavity, an air inlet and a water inlet disposed on one portion of the (filtering apparatus) device, and a clarified water outlet and a concentrated waste outlet disposed on another portion of the (filtering apparatus) device, the method including:

- a. closing the concentrated waste outlet and opening the clarified water outlet;*
- b. directing the water into the water inlet and through the treatment cavity;*
- c. as the water is passed through the treatment cavity, flowing the water adjacent a plurality of flexible fibers extending within the treatment cavity and removing fine particles from the water without separating a permeate from the water;*
- d. discharging the clarified water out the clarified water outlet;*
- e. closing the clarified water outlet and opening the concentrated waste outlet;*
- f. injecting air into the treatment cavity and mixing the air with the water having the fine particles to form an air-water mixture;*
- g. passing the air-water mixture through the treatment cavity and contacting the fibers and dislodging the fine particles captured on the fibers, producing a*

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concentrated waste including the air-water mixture and the dislodged fine particles; and

h. discharging the concentrated waste through the concentrated waste outlet.

As can be seen from the key above and the claim 25 patentability analysis, claim 41 recites structure disclosed by Boye, in view of Raff et al.. As will be shown next, Boye further discloses the claimed method.

43. To paraphrase independent claim 41, applicant is claiming a method to use the above filtering apparatus to filter raw water and to clean the filtering apparatus with both raw water and air introduced on the raw water side. Applicant's filtering apparatus has a housing with a cavity and flexible fibers are in the cavity. The flexible fibers are solid, not porous. At the first end of the filtering apparatus are a water inlet and an air inlet. At the second end of the filtering apparatus are a clarified water outlet and a waste outlet. The described apparatus was already found unpatentable in the claim 25 patentability analysis above.

44. Applicant uses the filtering apparatus as follows:

- (1) Close the waste outlet line and open the clarified water outlet line.
- (2) Feed raw water through the water inlet into the housing.
- (3) Discharge the clarified water from the clarified water outlet.
- (4) Close the clarified water outlet discharge line and open the waste outlet line.
- (5) Inject air into the housing to form an air-water mixture.
- (6) Let the air-water mixture pass through the housing to clean the flexible fibers.
- (7) Discharge concentrated waste through the waste outlet line.

45. As shown in the key above, Boye, in view of Raff et al., discloses the claimed apparatus. Boye further teaches the claimed method in Fig. 2, beginning with all valves closed.

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- (1) Close the waste outlet line (close valve 62) and open the clarified water outlet line (open valve 65).
 - (2) Feed raw water (open valve 69 and turn pump 52 on) through the water inlet (open valve 55) into the housing (filtering device 41).
 - (3) Discharge the clarified water (through pipe 64 to filtered container 70) from the clarified water outlet (from open valve 65).
 - (4) Close the clarified water outlet discharge line (close valve 65) and open the waste outlet line (open valve 62).
 - (5) Inject air (air inlet 66 through open valves 67 and 57) into the housing (filtering device 41) to form an air-water mixture.
 - (6) Let the air-water mixture pass through the housing (filtering device 41) to clean the flexible fibers.
 - (7) Discharge concentrated waste (through pipe 61 to deposit container 60) through the waste outlet line (valve 62).
46. In summary, Boye, in view of Raff et al., discloses or suggests all limitations recited in claim 41.
47. Dependent claims 42, 46, and 48-50 appear below in italics with the keyed structure underlined.

Claim 42. (Previously Presented) The method of claim 41 wherein respective fibers include opposed ends, and wherein one end of each fiber is fixed while the other end is unattached and free to move about as the water or air-water mixture passes through the treatment cavity; and wherein the fibers are non-tubular and non-membranous.

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Claim 46. (Previously Presented) The method of claim 41 wherein directing the water into the treatment cavity includes directing the water through an array of openings in a circumferential band extending around an outer wall that surrounds the treatment cavity and distributing the water within the cavity.

Claim 48. (Previously Presented) The method of claim 41 including generating turbulence in the treatment cavity by contacting the water with the fibers.

49. (Previously Presented) The method of claim 41 wherein the treatment cavity is formed by an elongated housing and wherein the air inlet and water inlet are disposed adjacent one end portion of the housing and the clarified water outlet and concentrated waste outlet are disposed adjacent an opposite end portion of the housing, and wherein the housing is cylindrical and the fibers extend generally longitudinally through the cavity as the water passes in contact with the fibers.

50. (New) The method of claim 41 wherein the clarified water is discharged out the clarified water outlet while the concentrated waste outlet is closed and wherein the concentrated waste is discharged through the concentrated waste outlet while the clarified water outlet is closed.

48. As can be seen from the key above and the discussion in the claim 25 patentability analysis, claims 42, 46, and 48-50 recite structure disclosed by Boye, in view of Raff et al.. As will be shown next, Boye discloses the claimed method recited in claims 42, 46, and 48-50.

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49. Claims 42, 46, and 49 recite various apparatus limitations already discussed above in claims 25, 26, and 28-32 and the analogous patentability analyses will not be repeated here. In summary, Boye, in view of Raff et al., discloses or suggests all limitations recited in claims 42, 46, and 49.

50. Claim 48 recites generating turbulence by contacting water with the fibers. Regarding Fig. 3, Boye discloses, "It is preferred that a ring 314 for providing a turbulent liquid flow, such as for example during the flushing process, is arranged at the inner wall of the housing 301." Boye, p. 18, lines 7-9. In summary, Boye in view of Raff et al., discloses or suggests all claim 48 limitations.

51. Claim 50 recites discharging clarified water when the concentrated waste outlet is closes – or closing the clarified water outlet while the concentrated waste outlet is discharged. Boye discloses this in Fig. 2. There, valve 65 is open to discharge clarified water to the filtered fluid container 70 through pipe 64 and, simultaneously, valve 62 is closed to close the concentrated waste outlet. Similarly, valve 65 is closed to close the clarified water outlet and, simultaneously, valve 62 is open to discharge concentrated waste to the deposit container 60 through pipe 61. In summary, Boye in view of Raff et al., discloses or suggests all claim 50 limitations.

52. To summarize, claims 41, 42, 46, and 48-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boye, in view of Raff et al. (U.S. Patent No. 5,053,130, Oct. 1, 1991) for the density control plate's location explicitly shown below the water jacket guide when the filtering apparatus is set on end.

53. Regarding dependent claims 43-45, 47, 51, and 52 – These methods claims recite apparatus limitations already discussed above in the patentability analyses of apparatus claims

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25, 26, and 28-32. The methods claims patentability analyses are analogous to those of the apparatus claims. Specifically, claims 43, 51, and 52 recite density control plate limitations; claims 44 and 45 recite a media fixing plate structure with air supply holes disposed adjacent the fibers; claim 47 recites porous chamber limitations. The details of the rejections follow – along with the claims in italics and the keyed structure underlined.

54. Claims 43, 51, and 52 recite density control plate limitations and, as such, are rejected under 35 U.S.C. 103(a) as being unpatentable over Boye (WO 02/24306 A1, Mar. 28, 2002) as applied to claim 41 above, in view of Raff et al. (U.S. Patent No. 5,053,130, Oct. 1, 1991) for the density control plate's location explicitly shown below the water jacket guide when the filtering apparatus is set on end.

Claim 43. (Previously Presented) The method of claim 41 including extending an annular device (density control plate) around a portion of the fibers and generally compressing the fibers in an area of the treatment cavity.

Claim 51. (New) The method of claim 41 wherein the flexible fibers extend through the cavity in an area between the water inlet and the air inlet; and wherein the method includes generally inhibiting the flow of water from the water inlet towards the air inlet by increasing the density of the flexible fibers in an area generally between the water inlet and the air inlet.

Claim 52. (New) The method of claim 41 including extending the flexible fibers through a generally central opening formed in an annular (density control) plate that is disposed

between the water inlet and the air inlet such that the flexible fibers are constrained by the opening in the annular (density control) plate and the density of the flexible fibers in the opening of the annular (density control) plate generally inhibits the flow of water from the water inlet to the air inlet.

55. Claims 44 and 45 recite a media fixing plate structure with air supply holes disposed adjacent the fibers and, as such, are rejected under 35 U.S.C. 103(a) as being unpatentable over Boye (WO 02/24306 A1, Mar. 28, 2002) as applied to claim 41 above, in view of Zha et al. (U.S. Patent No. 6,524,481 B2, Feb. 25, 2003) for the location of the air supply holes in the media fixing plate.

Claim 44. (Currently Amended) The method of claim 41 directing the air into the cavity through one or more air supply holes disposed adjacent the fibers.

Claim 45. (Currently Amended) The method of claim 41 including directing the air into the treatment cavity via an array of air supply holes disposed in a media fixing plate, the array of air supply holes being adjacent fiber ends that are secured to the media fixing plate.

56. Claim 47 recites a porous chamber structure and, as such, is rejected under 35 U.S.C. 103(a) as being unpatentable over Boye (WO 02/24306 A1, Mar. 28, 2002) as applied to claim 41 above, in view of Barzuza et al. (US Patent No. 4,617,120, Oct. 14, 1986) for the porous chamber.

Claim 47. (Previously Presented) The method of claim 41 including directing the clarified water into a porous chamber in fluid communication with the clarified water outlet, the (porous) chamber disposed in the treatment cavity and projecting in among the fibers when the water or air-water mixture is passing through the treatment cavity.

Response to Arguments

57. Some of applicant's arguments with respect to claims 25, 34, and 41 have been considered but are moot in view of the new ground(s) of rejection. The remainder of applicant's arguments in the Appeal Brief, filed June 19, 2009, has been fully considered but they are not persuasive.

58. All of applicant's arguments are listed below with the examiner's response after each argument.

a. Regarding claim 25, applicant argues, "[T]he alleged density control plate in Boye [that] has an annular shape is unsupported." Appeal Brief, p. 8, lines 9-10.

Regarding claim 28, applicant argues, "[T]he alleged density control plate in Boye [that] is an annular shape is unsupported." Appeal Brief, p. 13, lines 7-8.

Regarding claim 34, applicant argues, "Boye does not disclose a density control plate that is an annular plate." Appeal Brief, p. 16, line 9.

Regarding claim 52, applicant argues, "Boye does not disclose the claimed annular plate." Appeal Brief, p. 19, lines 1-2.

The examiner's response is that the disclosed density control plates in both Boye and Raff et al. are annular, as shown in the figures, since all density control plates have tubular bundles of fibers running through the density control plate's opening.

Boye discloses three annular density control plates in Fig. 1 (compressing means 7a, 7b, collar 11, and collar 12) and two annular density control plates in Fig. 3 (ring 314 and compression means 303). Raff et al. discloses one annular density control plate (ring 6b) in Fig. 7.

- b. Regarding claim 25, applicant argues, “[T]he alleged density control plate in Boye [that] is disposed below the alleged water jacket guide is unsupported. . . . Boye expressly teaches placing the alleged density control plate above the water jacket guide. . . . It is practically impossible to position the alleged density control plate below the alleged water guide jacket and compress the fibers.” Appeal Brief, p. 9, lines 12-13; p. 10, lines 15-16; p. 11, lines 3-4.

Regarding claim 28, applicant argues, “[T]he alleged density control plate in Boye [that] is positioned between the alleged media fixing plate and the alleged water guide jacket is unsupported.” Appeal Brief, p. 13, lines 20-22.

The examiner responds that Boye implies locating the density control plate between the media fixing plate and the water guide jacket but does not explicitly state it. A secondary reference, Raff et al., was identified to explicitly teach the density control plate's location.

Specifically, Boye discloses three density control plates (Fig. 1, compressing means 7a and 7b, first and collars 11 and 12) that are within housing (Fig. 1, holding member 9) above water jacket guide (Fig. 1, water jacket guide surrounds inlets 6). Boye further teaches, “[T]he principles of having a fluid filtration wherein a plurality of fibres extend longitudinally in the direction of the fluid flow, and wherein the

quality of the filtration is controlled by adjusting the compression and thereby the density of the fibres is known." Boye, p. 2, lines 10-13. In a discussion of "the distance from the inlet end of the fibre housing to said location of compression," Boye discloses that "[d]ifferent arrangements of said location of compressing may be used" with the preferred distance being 25% to 60% "the total length of the fibre housing." Boye, p. 4, lines 15-22. Boye also teaches that the water jacket guide has to be near inlet 5, but not at inlet 5, when Boye states, "A number of inlets 6 are arranged in the side-wall of the fibre housing near the inlet end 5." Boye, p. 2, lines 10-13 and p. 10, lines 32-33. To recap, then, Boye discloses multiple density control plates along the length of the housing, one of which can be below water jacket guide, "according to the principles of fluid filtration" to "adjust (in applicant's case, increase) the compression and thereby the density of the fibers." Boye, p. 2, lines 10-13.

In Fig. 7, Raff et al. explicitly teaches that the density control plate (ring 6b) is below the water jacket guide (expanded part 7b) and above the media fixing plate (hollow fibers 1b arranged in housing 2b where the media fixing plate is shown within restricted part 5b) when the filtering apparatus is set on end. Raff et al. describes the density control plate (ring 6b) as follows. "Interposed between the end wall (applicant's media fixing plate) and the housing (that includes applicant's water jacket guide) is a ring member (applicant's density control plate). This ring member has a shape that corresponds to the housing and defines a cavity between itself and the hollow fibers. This ring member has a coefficient of adhesion in relation to the end wall which is lower than the coefficient of adhesion in relation to the housing.

As a result, the structural integrity of the housing and the seal created by the end wall is enhanced and the risk of cracks therein is substantially eliminated.” In other words, the structural integrity of the fibers’ seals is enhanced and the risk of cracks is substantially eliminated.

To recap, Boye, in view of Raff et al., discloses the claimed invention. Raff et al. further teaches that the density control plate (ring 6b) is below the water jacket guide (expanded part 7b) and above the media fixing plate (hollow fibers 1b arranged in housing 2b where the media fixing plate is shown within restricted part 5b) when the filtering apparatus is set on end. The motivation to locate the Boye density control plate as such is provided by Raff et al., at col. 2, lines 17-24 where it is stated that this modification would enhance the structural integrity of the fiber’s seal and substantially eliminate the risk of cracks.

- c. Regarding claims 25, applicant argues, “[T]he alleged header jacket in Boye [that] includes both a clarified water outlet and waste outlet is unsupported.” Appeal Brief, p. 12, lines 1-2.

Regarding claim 41, applicant argues, “Boye does not disclose a device that includes both a clarified water outlet and a concentrated waste outlet.” Appeal Brief, p. 17, lines 6-7.

The examiner responds as in the above patentability analysis. The key lists the header jacket as disclosed by Boye in Fig. 1, which includes the structure shown at the arrow exiting the filter device. The water outlet structure is shown in Fig. 2 before valve 62 which is connected to pipe 61 leading to deposit container 60. The

clarified water outlet structure is shown in Fig. 2 before valve 65 which is connected to pipe 64 leading to filtered fluid container 70. As such, Boye discloses a header jacket with both a clarified water outlet and a concentrated waste outlet.

A second response is also available and was included in the rejection. Header jackets are known in the art that look more like applicant's Fig. 2, filtrate discharge jacket 16. For example, Raff et al. discloses header jackets (Figs. 3, 6, and 9) with clarified water outlets (outlets 15 and 15b) and waste outlets (outlets 4 and 4b). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have substituted the Boye header jacket for that disclosed in Raff et al., since it was known in the art to provide a clarified water outlet and a waste outlet in a filtering apparatus.

- d. Regarding claim 30, applicant argues, "Boye does not provide air supply holes formed in an array disposed in a media fixing plate." Appeal Brief, p. 15, lines 3-4. Regarding claim 45, applicant argues, "Boye does not disclose an array of air supply holes disposed in a media fixing plate." Appeal Brief, p. 18, lines 1-2.

The examiner's response was that a secondary reference, Zha et al., was identified to teach this.

Conclusion

59. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Denise R. Anderson whose telephone number is (571)270-3166. The examiner can normally be reached on Monday through Thursday, from 8:00 am to 6:00 pm.

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60. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter D. Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

61. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DRA/

/Walter D. Griffin/
Supervisory Patent Examiner, Art Unit 1797